SOIL INTERIM MEASURES WORK PLAN
Q6 RADAR STATION, Q6-0082, SOLID WASTE MANAGEMENT UNIT #112, LOCATION OF CONCERN 3
KENNEDY SPACE CENTER, FLORIDA

Prepared for:

Environmental Assurance Branch
National Aeronautics and Space Administration
Kennedy Space Center, Florida 32899

A-E Contract 80KSC019D0010
Task Order 80KSC020F0027

August 2021
Revision 0

Prepared by:
AECOM
150 N Orange Ave, Suite 200
Orlando, FL 32801
407-843-6552

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In accordance with the provisions of Florida Statutes, Chapter 471, this Q6 Radar Station Interim Measures Work Plan for the Kennedy Space Center in Merritt Island, Florida, has been prepared under the direct supervision of a Professional Engineer registered in the State of Florida. This document and the work described herein complies with standard professional practices and the requirements of Chapter 62-780, Florida Administrative Code (FAC) and other rules of the Florida Department of Environmental Protection according to Rule 62-780.400(1), FAC The data, findings, recommendations, specifications, or professional opinions were prepared solely for the use of the National Aeronautics and Space Administration and the Florida Department of Environmental Protection. AECOM makes no other warranty, either expressed or implied, and is not responsible for the interpretation by others of these data.

This item has been digitally signed and sealed by:

Steven C. Cobert, PE Date
Florida License No. 54899
Florida Certificate of Authorization No. 8115
Printed copies of this document are not considered signed and sealed and the signature must be verified on electronic copies.

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SOIL INTERIM MEASURES WORK PLAN

Facility Name/SMWU No.:	Q6 Radar Station, Q6-0082, Solid Waste Management Unit #112, Location of Concern 3
Consultant/PM:	AECOM Technologies, Inc./Steve Cobert
NASA RPM:	Anne Chrest
CAMP Date:	None
Prepared On:	August 13, 2021
Revised On:	N/A

Site Usage and Soil Investigation Activities

1. **Describe facility usage.** The main function of the Q6 Radar Station is to house various types of radar tracking equipment in support of launches from KSC and Cape Canaveral Space Force Station (CCSFS). The structures and buildings are owned by the United States Air Force (USAF), and are located on NASA property. Operational areas of the Q6 Radar Station can be separated into two areas: the radar area to the north and the boresight tower area located approximately 0.3 miles to the south. The Banana River is located approximately 1,100 feet to the east of the radar pad. A site location figure is provided as **Figure 1**.

Location of concern (LOC) 3 is the area surrounding the base of the radar antenna, adjacent to the Powerhouse and Hydraulic Shed. This area consists of exterior walls of concrete block construction and metal stairs with wooden and metal handrails.

2. **Is the facility normally occupied? Describe how site controls will be performed and how area workers will be informed of health and safety issues associated with the Interim Measures.** The Q6 Radar Station is normally occupied and staffed from approximately 07:00 to 15:30. Launch schedules may require the facility to be staffed outside the normal working hours. The Interim Measure (IM) activities will be scheduled and coordinated with the Q6 Radar Station facility manager and National Aeronautics and Space Administration (NASA) RPM. A Site-Specific Safety and Health Plan for IM activities will be developed for NASA Safety and Environmental Health.

3. **What are the contaminants of concern (COC)? Describe the soil investigation activities completed and regulatory approvals.** Confirmatory sampling (CS) was completed to confirm the presence or absence of polychlorinated biphenyls (PCBs), hydrocarbons, metals, and solvents in soil and or groundwater from radar antenna refurbishment activities or spills and leaks associated with the Powerhouse or Hydraulic Shed. Based on the CS results, barium and copper were identified as COCs at LOC 3. A CS Report and Recovery Act (RCRA) Facility Investigation (RFI) Workplan were submitted to Florida Department of Environmental Protection (FDEP) in September 2019, and subsequently approved on January 20, 2020.

RFI soil sampling activities were conducted on February 22, 2021 and achieved the RFI Workplan objective to delineate the horizontal and vertical extent of barium and copper affected soils. The soil

sampling results were presented to the KSC Remediation Team at the June 23, 2021 meeting. Team consensus was reached that the barium and copper affected soil have been delineated and an interim measure should be conducted. Copies of the CS Report and RFI Workplan FDEP approval letter, and June 23, 2021 KSCRT meeting minutes and decision items, are included in **Attachment A**.

CS and RFI sampling results obtained to date have indicated the following:

- The results identified soil contaminated with barium and copper at concentrations exceeding their Chapter 62-770, Florida Administrative Code (FAC), Residential Soil Cleanup Target Level (RSCTL) of 120 and 150 milligrams per kilogram (mg/kg), respectively. The copper and barium impacts are limited to the 0.5-foot interval. Barium and copper soil analytical results are provided in **Table 1** of **Attachment B**.
- Arsenic was detected at soil borings SB0004 and SB0034 at concentrations exceeding the RSCTL in the 0.5-foot interval. However, the reported arsenic concentrations were below established Kennedy Space Center (KSC) background concentrations of 8.5 mg/kg. FDEP concurred arsenic is not a COC at LOC 3.
- Cadmium and chromium were identified in soil borings SB0004, SB0005, SB0006, and SB0034 at the 0.5-foot interval at concentrations exceeding Leachability SCTL (LSCTL) criteria. The soil samples were submitted for analysis by Synthetic Precipitation leaching Procedure (SPLP), and the results were below Groundwater Cleanup Target Level (GCTL) criteria. FDEP concurred cadmium and chromium are not COCs at LOC 3.
- Total lead was detected at soil boring SB0006 at a concentration exceeding established background levels but less than the RSCTL. SPLP extraction was performed on the sample to further evaluate leachability and the extract result was greater than the GCTL. A monitoring well MW0003 was installed near the soil boring SB0006 location with a screened interval at the top of the water table. Laboratory analysis of the groundwater sample did not detect total lead at a concentration exceeding GCTL criteria. FDEP concurred lead is not a COC at LOC 3.
- Total Petroleum Hydrocarbons (TPH) was detected at soil borings SB0007 and SB0045 at concentrations exceeding RSCTL criteria. However, the samples were submitted for TPH speciation, which indicated that no analyzed carbon ranges exceeded RSCTL or LSCTL criteria. FDEP concurred TPH is not a COC at LOC 3.

4. **When did the release(s) occur at this facility, if known.** The soil impacts are thought to be the result of radar station refurbishment activities, and deposition of containments to surrounding soils. The last known refurbishment activities occurred in 2009. Refurbishment activities were likely performed prior to that as well, which was customary practice for painted metal towers and antennas.

5. **Are the copper and barium detections associated with a liquid release, paint residue, or other (please describe)?** It is suspected that the contaminated media is associated with radar station refurbishment activities, and the disposition of contaminated media to the surrounding soils.

Interim Measures Information

6. **What is the purpose of the proposed Interim Measures (IM)? Include a list of the parameter groups being addressed by the IM.** The objective of the IM is to mitigate approximately 58 cubic yards (cy) of barium and/or copper impacted soil in the area surrounding

the radar base, unpaved areas outside the radar antenna base, and the compressor area to the west of the radar pad. The excavation areas are delineated on **Figures 1 through 7** provided in **Attachment C**. Hand digging tools and/or the use of vacuum soil extraction will be required given the proximity of buildings, surface utilities, and communications infrastructure. Following excavation, these areas will be backfilled with clean soil and compacted to existing grade.

7. **List the specific contaminants being addressed by the IM, maximum facility concentrations, and the associated proposed cleanup goals and source(s) (industrial SCTLs, etc.).** Copper and barium concentrations are presented in mg/kg in the following table.

Contaminant	Maximum Facility Concentration (mg/kg)	Cleanup Goal (mg/kg)	Cleanup Goal Source
Copper	590	150	FDEP, SCTL, Residential
Barium	1,030	120	FDEP, SCTL, Residential

Note: FDEP = Florida Department of Environmental Protection

8. **Will a land use control implementation plan (LUCIP) be required following completion of the IM (i.e., will residual concentrations of any contaminant exceed applicable residential criteria)?** No, a LUCIP will not be required for soil at the LOC 3 area.

9. **List each proposed excavation area, contaminants of concern (COC), area of excavation, and associated depth intervals.**

Contaminant(s) of Concern	Area of Excavation (ft^2)	Depth interval (ft bls)	Volume (cy)	Comments
Barium and Copper	785	0-2	58	See note below

Note:

a) Figures 1 through 7 show each excavation area with coordinates and soil sample results.

10. **Will confirmation samples be required? If so, describe. Consider the need for both vertical and horizontal extent samples and indicate sampling frequencies (number of samples per square foot, etc.).** No confirmation sampling will be required. The excavation areas are horizontally and vertically bounded by samples with barium and copper concentrations that are less than FDEP RSCTL or a physical boundary (i.e., concrete pavement, curb, or structure). Barium was detected in the 0.5-foot interval at soil boring SB0052, however a 2-foot interval samples was not collected at this location. A 2-foot interval sample was collected at the location of soil boring SB0059, which is located approximately five

feet from soil boring SB0052. The actual location of soil boring SB0046 was reviewed following the June 23, 201 KSCRT meeting, and the location of soil boring SB0046 was corrected based on photographs and field logs from the 2019 CS activities. It appears that the radar structure interfered with the ability to obtain accurate GPS coordinates, and the coordinates used to prepare the ADP presented at the KCRT meeting in June 2021 did not accurately reflect the location of soil boring SB0046. Based on the corrected soil boring SB0046 location, the proposed soil excavation area surrounding soil boring SB0007 is bound by clean soil samples and/or physical structures such as building foundations or sidewalks (refer to **Figures 1 and 2**).

11. **Will shoring or dewatering be required? If so, describe.** Dewatering and/or shoring will not be required.

12. **Are there any special decontamination requirements? If so, describe.** A general decontamination area will be created and maintained. Decontamination fluids that are generated will be containerized and characterized for proper disposal.

Waste Handling and Disposal

13. **How will excavated soil be stored prior to disposal?**

Drums Roll-offs ☒ Other (describe): It is expected that soils will be excavated by hand or with the use of a vacuum truck. Soils excavated using hand tools will be stockpiled and subsequently loaded into trucks or roll-offs for transport and disposal. Soils excavated using a vacuum truck will be stored within the vacuum truck, then stockpiled as needed, and loaded into trucks for transport and disposal. Each truck will be weighed, manifested, and transported to J.E.D. Solid Waste Management Facility (formerly known as OMNI Landfill), or a similarly permitted facility for disposal.

14. **How will miscellaneous debris and decontamination fluids be stored prior to disposal?**

☒ Drums Roll-offs Other (describe):

15. **Are there any special waste segregation requirements? If so, describe.** None are expected.

16. **How will the waste be characterized for disposal?** A minimum of one composite soil sample will be collected per 500 tons of soil for waste characterization. The samples will be analyzed for criteria required by the landfill. Soil will be disposed of as non-hazardous waste if analytical values are less than the regulatory limits.

17. **Are there any special fill characterization or compaction requirements? If so, describe.** Certified clean fill (i.e., less than or equal to FDEP SCTLs) will be required. There are no special compaction requirements; the areas will be backfilled and restored to pre-excavation elevations. Care will be taken during excavation, backfilling, and restoration activities to avoid undermining surrounded paved areas and impacting buried utilities.

Other Issues

18. **Are there any other specific issues, including health and safety that need to be considered? If so, describe.** Erosion and sediment controls Best Management Practices (BMPs) will be maintained throughout the project and until permanent site stabilization is obtained. Dust on access roads and construction zones will be kept to a minimum by watering dry areas during excavation and loading of impacted soil. Care will be taken not to contact underground utilities. Appropriate personal protective equipment (PPE) will be used. The IM field work will be completed in close coordination with the NASA facility manager and work will be scheduled with the demolition contractor. Existing monitoring well MW0003 should be preserved during the excavation activities.

19. **Work schedule:** This work will be scheduled after the work plan is approved.

Attachments

Attachment A CS Report and RFI Workplan FDEP Approval Letter and June 23, 2021 Meeting Minutes and Decision Items

Attachment B Table

Table 1: Soil Analytical Results for Barium and Copper

Attachment C Figures

Figure 1: LOC 3 Soil Boring Sample Results
Figure 2: LOC 3 – SB0007 Excavation Area
Figure 3: LOC 3 – SB0004 Excavation Area
Figure 4: LOC 3 – SB0006 Excavation Area
Figure 5: LOC 3 – SB0057 Excavation Area
Figure 6: LOC 3 – SB0054 Excavation Area
Figure 7: LOC 3 – SB0060 Excavation Area

ATTACHMENT A

FDEP CORRESPONDENCE AND KSCRT MEETING MINUTES

FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

January 31, 2020

Attention: Mr. Mike Deliz
Environmental Program Manager
Environmental Assurance Branch
National Aeronautics and Space Administration
John F. Kennedy Space Center
Kennedy Space Center, Florida 32899-0001

RE: Confirmatory Sampling (CS) Report and RCRA Facility Investigation Work Plan, Revision 0, Potential Release Location (PRL) 214, Q6 Radar Station, National Aeronautics and Space Administration (NASA) – Kennedy Space Center (KSC), USEPA ID #FL6 800 014 585, Florida (Tetra Tech, October 4, 2019)

Dear Mr. Deliz:

The Department has reviewed the subject document dated October 4, 2019 (received on October 9, 2019). The purpose of this CS Report is to present the findings of CS activities completed at Q6RS. In the Conclusions and Recommendations Section of the document it states that based on the results of the CS, it is recommended that LOCs 1 and 3 proceed to an RCRA Facility Investigation (RFI) to delineate SCTL and GCTL exceedances identified at these LOCs during the CS and LOC 10 proceed to a soil IM to address residential SCTL exceedances. NFA is recommended at LOCs 2, 4, 5, 6, 7, 8, and 9 based on the absence of contamination found during CS.

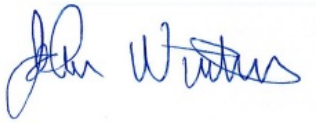
Based on this review, and the fact that the KSC Remediation Team (KSCRT) reached consensus on the NFA recommendations for these LOCs at the June 2019 Team Meeting, the Department concurs with the recommendations outlined in the document and with the RFI Work Plan for LOCs 1 and 3 and the soil IM Work Plan for LOC 10 as presented in the appendices E and F within the document.

Additionally, per the June 26, 2017 University of Florida (U of F) Center for Environmental and Human Toxicology letter concerning the review of the calculation for

alternative cleanup target levels for copper and barium at Cape Canaveral Air Force Station and Patrick Air Force Base (see attachment), the Department wishes to clarify the clean up target levels established using the exposure parameters outlined in the letter are to be considered Alternative Soil Cleanup Target Levels (ASCTLs) not Provisional SCTLs.

Thank you for the opportunity to review this document. If you require additional clarification or other assistance, please feel free to contact me at 850/245-8999.

Sincerely,



John Winters, P.G.
Remedial Project Manager
Federal Programs Section
Waste Cleanup Program

LB/jw 

ATTACHMENT B

TABLE

Table 1
Q6 Radar Station - PRL 214, LOC 3
Soil Analytical Results for Barium and Copper

				Category	***Metals by Method 6010C***	
				Analyte	***Barium***	***Copper***
				FDEP RSCTL (mg/kg)	***120***	***150***
				FDEP ISCTL (mg/kg)	***130,000***	***89,000***
				FDEP LSCT (mg/kg)	***1600***	**-**
Location ID	**Northing**	**Easting**	**Sample Date**	**Screened Interval (ft bls)**		
Q6RS-SB0003	453324.4690	232878.6317	8/9/2018	0-0.5	**191**	**280**
			10/9/2018	0.5-2	4.8	1.3 I
Q6RS-SB0004	453321.1715	232882.6477	8/9/2018	0-0.5	**315**	140 B
			10/9/2018	0.5-2	20	NS
Q6RS-SB0005	453314.0148	232878.4477	8/13/2018	0-0.5	**1030**	147
			10/9/2018	0.5-2	17	NS
Q6RS-SB0006	453318.9247	232874.6909	8/13/2018	0-0.5	**401**	**235**
			10/9/2018	0.5-2	6.2	10
Q6RS-SB0007	453323.3216	232881.8372	8/9/2018	0-0.5	**127**	38.6
			10/10/2018	0.5-2	4.4	NS
Q6RS-SB0034	453318.6598	232866.6283	8/13/2018	0-0.5	**222**	88.1
			10/10/2018	0-0.5	**290**	NS
			10/10/2018	0.5-2	6.8	NS
Q6RS-SB0039	453326.1434	232878.6503	10/10/2018	0-0.5	29	14
Q6RS-SB0040	453326.8112	232882.6193	10/10/2018	0-0.5	8.1	5.2
Q6RS-SB0041	453324.9622	232885.2181	10/10/2018	0-0.5	5.3	1.2 I
Q6RS-SB0042	453312.9891	232882.8972	10/10/2018	0-0.5	3.9	NS
Q6RS-SB0043	453310.5808	232879.1827	10/10/2018	0-0.5	2.7	NS
Q6RS-SB0045	453319.9212	232868.5102	10/10/2018	0-0.5	29	15
Q6RS-SB0046	453322.2685	232884.2333	7/19/2019	0-0.5	18	11
Q6RS-SB0047	453325.9390	232877.2774	7/19/2019	0-0.5	**400**	**180**
			7/19/2019	0.5-2	7.9	6.1
Q6RS-SB0048	453320.5398	232890.9137	7/19/2019	0-0.5	11	9.5
Q6RS-SB0049	453315.4287	232885.0961	7/19/2019	0-0.5	15	6
			7/19/2019	0.5-2	4.5	0.66 I
Q6RS-SB0050	453309.6061	232881.1633	7/19/2019	0-0.5	3.5	1.6 I
Q6RS-SB0051	453309.7584	232875.7272	7/19/2019	0-0.5	2.4	1.6 I
Q6RS-SB0052	453312.7161	232874.1473	7/19/2019	0-0.5	**140**	26
			7/19/2019	0.5-2	NS	32
Q6RS-SB0053	453314.2872	232873.6818	7/19/2019	0-0.5	**950**	**280**
Q6RS-SB0054	453315.8378	232868.9909	7/19/2019	0-0.5	**340**	140
			7/19/2019	0.5-2	14	NS
Q6RS-SB0055	453316.2686	232866.8341	7/19/2019	0-0.5	57	67
Q6RS-SB0056	453315.7461	232863.4030	7/19/2019	0-0.5	21	64
Q6RS-SB0057	453318.4829	232863.9140	7/19/2019	0-0.5	63	**590**
			7/19/2019	0.5-2	NS	23
Q6RS-SB0058	453326.2696	232876.3847	2/22/2021	0-0.5	23	72.4

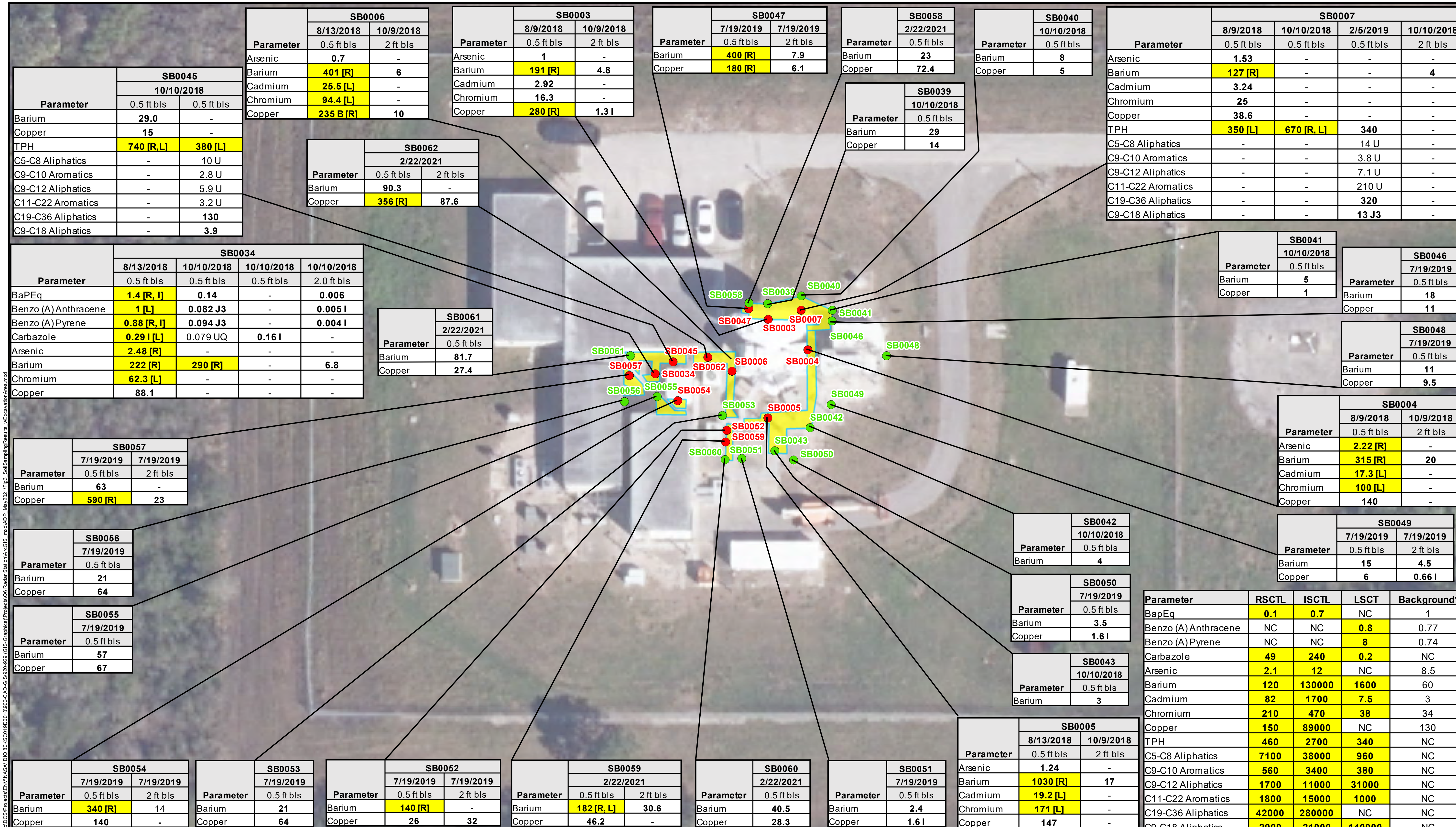
Table 1
Q6 Radar Station - PRL 214, LOC 3
Soil Analytical Results for Barium and Copper

				Category	***Metals by Method 6010C***	
				Analyte	***Barium***	***Copper***
				FDEP RSCTL (mg/kg)	***120***	***150***
				FDEP ISCTL (mg/kg)	***130,000***	***89,000***
				FDEP LSCT (mg/kg)	***1600***	**-**
Location ID	**Northing**	**Easting**	**Sample Date**	**Screened Interval (ft bls)**		
Q6RS-SB0059	453311.5047	232874.0221	2/22/2021	0-0.5	**182**	46.2
			2/22/2021	0.5-2	30.6	NS
Q6RS-SB0060	453309.6527	232873.9560	2/22/2021	0-0.5	40.5	28.3
Q6RS-SB0061	453320.5666	232864.0341	2/22/2021	0-0.5	81.7	27.4
Q6RS-SB0062	453320.3821	232872.1606	2/22/2021	0-0.5	90.3	**356**
			2/22/2021	0.5-2	NS	87.6

Notes:
ft bls = below land surface
NS = not sampled
I = Result is between the method detection limit and the limit of quantitation
mg/kg = milograms per kilogram
All results and screening criteria presented in mg/kg
Bolded results indicate the presence of an analyte above the FDEP RSCTL
FDEP RSCTL = Florida Department of Environmental Protection Residential Soil Cleanup Target Levels, Chapter 62-777 Florida Administratve Code, Table II (April 2005)
FDEP ISCTL = Florida Department of Environmental Protection Industrial Soil Cleanup Target Levels, Chapter 62-777 Florida Administratve Code, Table II (April 2005)
FDEP LSCTL = Florida Department of Environmental Protection Leachability Soil Cleanup Target Levels, Chapter 62-777 Florida Administratve Code, Table II (April 2005)

ATTACHMENT C

FIGURES



Parameter	SB0045 10/10/2018 0.5 ft bls	SB0045 10/10/2018 0.5 ft bls
Barium	29.0	-
Copper	15	-
TPH	740 [R,L]	380 [L]
C5-C8 Aliphatics	-	10 U
C9-C10 Aromatics	-	2.8 U
C9-C12 Aliphatics	-	5.9 U
C11-C22 Aromatics	-	3.2 U
C19-C36 Aliphatics	-	130
C9-C18 Aliphatics	-	3.9

Parameter	SB0006 8/13/2018 0.5 ft bls	SB0006 10/9/2018 2 ft bls
Arsenic	0.7	-
Barium	401 [R]	6
Cadmium	25.5 [L]	-
Chromium	94.4 [L]	-
Copper	235 B [R]	10

Parameter	SB0003 8/9/2018 0.5 ft bls	SB0003 10/9/2018 2 ft bls
Arsenic	1	-
Barium	191 [R]	4.8
Cadmium	2.92	-
Chromium	16.3	-
Copper	280 [R]	1.3 I

Parameter	SB0047 7/19/2019 0.5 ft bls	SB0047 7/19/2019 2 ft bls
Barium	400 [R]	7.9
Copper	180 [R]	6.1

Parameter	SB0058 2/22/2021 0.5 ft bls
Barium	23
Copper	72.4

Parameter	SB0040 10/10/2018 0.5 ft bls
Barium	8
Copper	5

Parameter	SB0039 10/10/2018 0.5 ft bls
Barium	29
Copper	14

Parameter	SB0007 8/9/2018 0.5 ft bls	SB0007 10/10/2018 0.5 ft bls	SB0007 2/5/2019 0.5 ft bls	SB0007 10/10/2018 2 ft bls
Arsenic	1.53	-	-	-
Barium	127 [R]	-	-	4
Cadmium	3.24	-	-	-
Chromium	25	-	-	-
Copper	38.6	-	-	-
TPH	350 [L]	670 [R, L]	340	-
C5-C8 Aliphatics	-	-	14 U	-
C9-C10 Aromatics	-	-	3.8 U	-
C9-C12 Aliphatics	-	-	7.1 U	-
C11-C22 Aromatics	-	-	210 U	-
C19-C36 Aliphatics	-	-	320	-
C9-C18 Aliphatics	-	-	13 J3	-

Parameter	SB0062 2/22/2021 0.5 ft bls	SB0062 2/22/2021 2 ft bls
Barium	90.3	-
Copper	356 [R]	87.6

Parameter	SB0034 8/13/2018 0.5 ft bls	SB0034 10/10/2018 0.5 ft bls	SB0034 10/10/2018 0.5 ft bls	SB0034 10/10/2018 2.0 ft bls
BaPEq	1.4 [R, I]	0.14	-	0.006
Benzo (A) Anthracene	1 [L]	0.082 J3	-	0.005 I
Benzo (A) Pyrene	0.88 [R, I]	0.094 J3	-	0.004 I
Carbazole	0.29 I [L]	0.079 UQ	0.16 I	-
Arsenic	2.48 [R]	-	-	-
Barium	222 [R]	290 [R]	-	6.8
Chromium	62.3 [L]	-	-	-
Copper	88.1	-	-	-

Parameter	SB0061 2/22/2021 0.5 ft bls
Barium	81.7
Copper	27.4

Parameter	SB0041 10/10/2018 0.5 ft bls
Barium	5
Copper	1

Parameter	SB0046 7/19/2019 0.5 ft bls
Barium	18
Copper	11

Parameter	SB0048 7/19/2019 0.5 ft bls
Barium	11
Copper	9.5

Parameter	SB0004 8/9/2018 0.5 ft bls	SB0004 10/9/2018 2 ft bls
Arsenic	2.22 [R]	-
Barium	315 [R]	20
Cadmium	17.3 [L]	-
Chromium	100 [L]	-
Copper	140	-

Parameter	SB0057 7/19/2019 0.5 ft bls	SB0057 7/19/2019 2 ft bls
Barium	63	-
Copper	590 [R]	23

Parameter	SB0056 7/19/2019 0.5 ft bls
Barium	21
Copper	64

Parameter	SB0055 7/19/2019 0.5 ft bls
Barium	57
Copper	67

Parameter	SB0042 10/10/2018 0.5 ft bls
Barium	4

Parameter	SB0049 7/19/2019 0.5 ft bls	SB0049 7/19/2019 2 ft bls
Barium	15	4.5
Copper	6	0.66 I

Parameter	SB0050 7/19/2019 0.5 ft bls
Barium	3.5
Copper	1.6 I

Parameter	SB0043 10/10/2018 0.5 ft bls
Barium	3

Parameter	SB0005 8/13/2018 0.5 ft bls	SB0005 10/9/2018 2 ft bls
Arsenic	1.24	-
Barium	1030 [R]	17
Cadmium	19.2 [L]	-
Chromium	171 [L]	-
Copper	147	-

Parameter	SB0054 7/19/2019 0.5 ft bls	SB0054 7/19/2019 2 ft bls
Barium	340 [R]	14
Copper	140	-

Parameter	SB0053 7/19/2019 0.5 ft bls
Barium	21
Copper	64

Parameter	SB0052 7/19/2019 0.5 ft bls	SB0052 7/19/2019 2 ft bls
Barium	140 [R]	-
Copper	26	32

Parameter	SB0059 2/22/2021 0.5 ft bls	SB0059 2/22/2021 2 ft bls
Barium	182 [R, L]	30.6
Copper	46.2	-

Parameter	SB0060 2/22/2021 0.5 ft bls
Barium	40.5
Copper	28.3

Parameter	SB0051 7/19/2019 0.5 ft bls
Barium	2.4
Copper	1.6 I

Parameter	RSCTL	ISCTL	LSCT	Background*
BapEq	0.1	0.7	NC	1
Benzo (A) Anthracene	NC	NC	0.8	0.77
Benzo (A) Pyrene	NC	NC	8	0.74
Carbazole	49	240	0.2	NC
Arsenic	2.1	12	NC	8.5
Barium	120	130000	1600	60
Cadmium	82	1700	7.5	3
Chromium	210	470	38	34
Copper	150	89000	NC	130
TPH	460	2700	340	NC
C5-C8 Aliphatics	7100	38000	960	NC
C9-C10 Aromatics	560	3400	380	NC
C9-C12 Aliphatics	1700	11000	31000	NC
C11-C22 Aromatics	1800	15000	1000	NC
C19-C36 Aliphatics	42000	280000	NC	NC
C9-C18 Aliphatics	2900	21000	140000	NC

Legend

- Soil Boring (Hit)
- Soil Boring (Clean)
- Excavation Area (2' bls)

Notes:

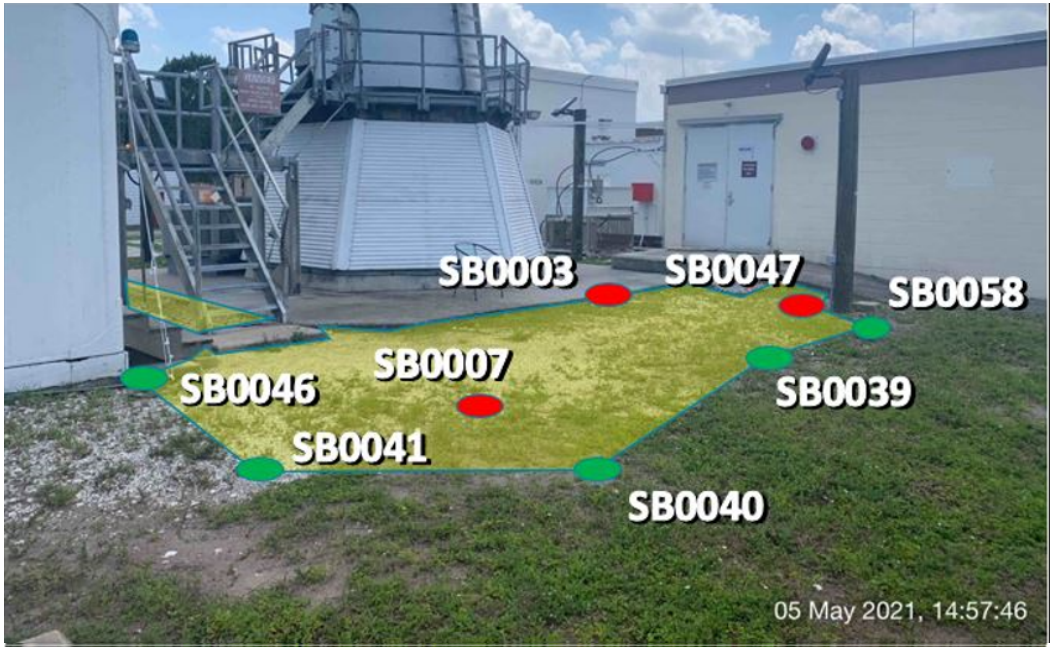
- All results and screening criteria presented in mg/kg
- **Bolded** results indicate the presence of an analyte at the specified concentration
- Highlighted cell indicates an exceedance
- U = Not detected
- I = Laboratory method detection limit
- J = Estimated concentration
- Q = Holding time exceed
- [R] = Residential exceedance
- [I] = Industrial exceedance
- [L] = Leachate exceedance
- TPH SCTL exceedance was not confirmed with TPH fraction analysis and SPLP extract analysis
- *Higher value of General Industrial Reference (max range) and Combined Soil Background (max range) values presented

N

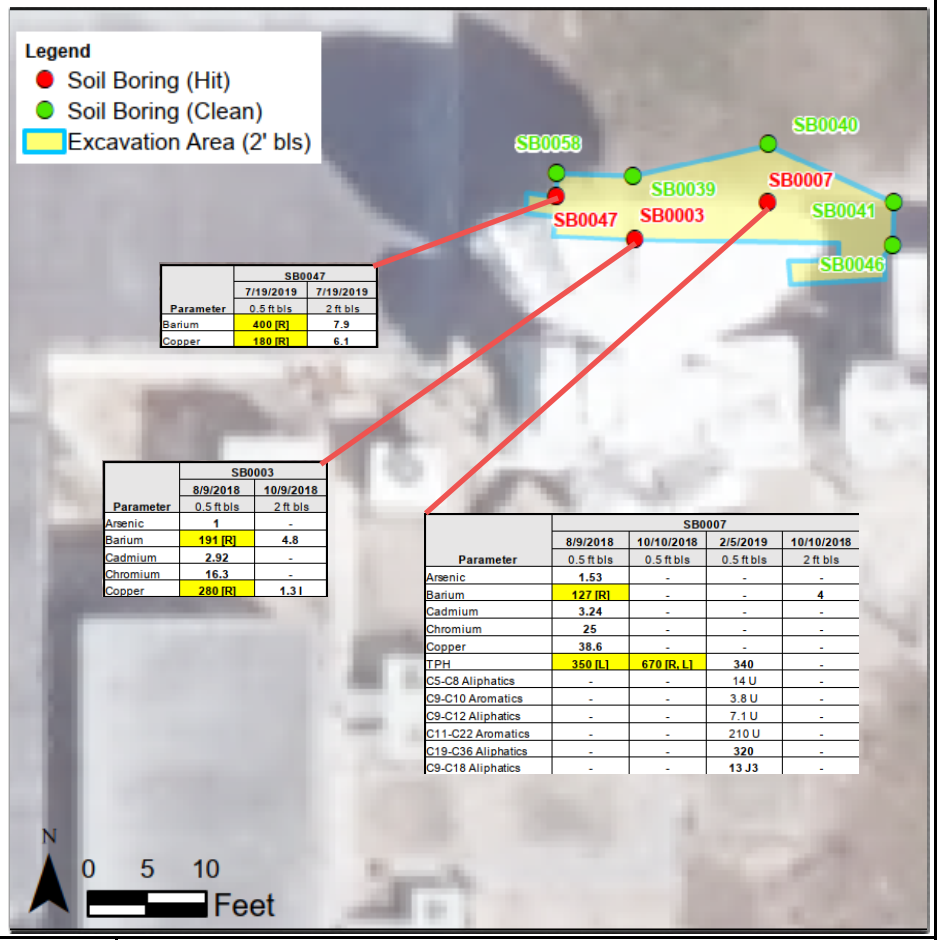
0 20 40 Feet

Figure 1
LOC 3 Soil Boring Sample Results

Q6 Radar Station - PRL 214
NASA Kennedy Space Center, Florida



203 square feet
15 cubic yards



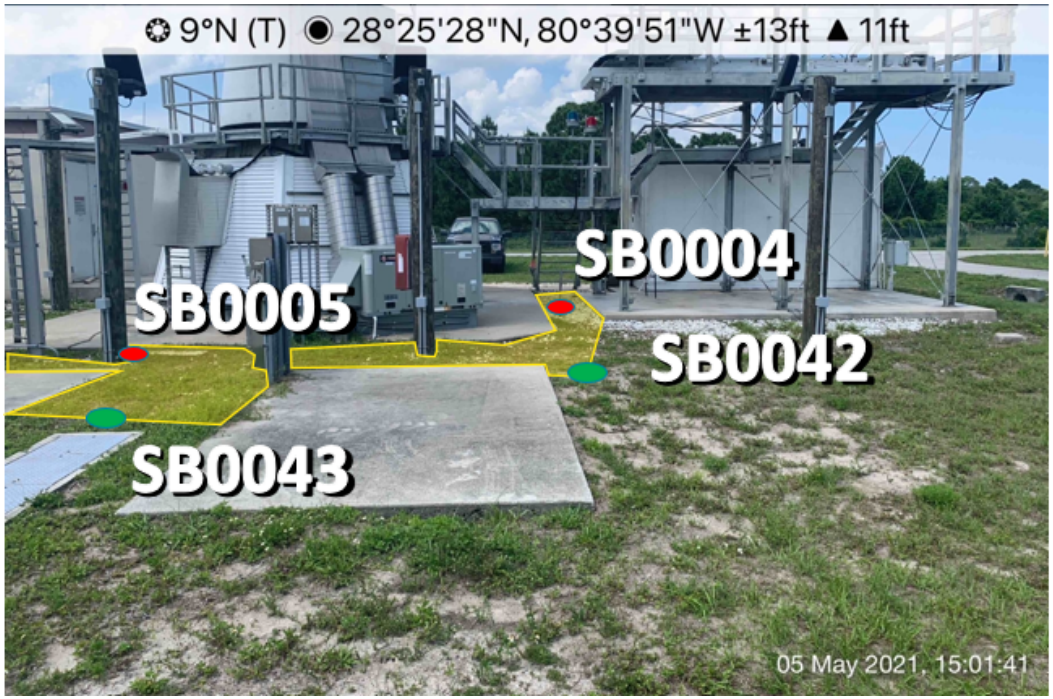
Parameter	SB0047 7/19/2019 0.5 ft bls	SB0047 7/19/2019 2 ft bls
Barium	400 [R]	7.9
Copper	180 [R]	6.1

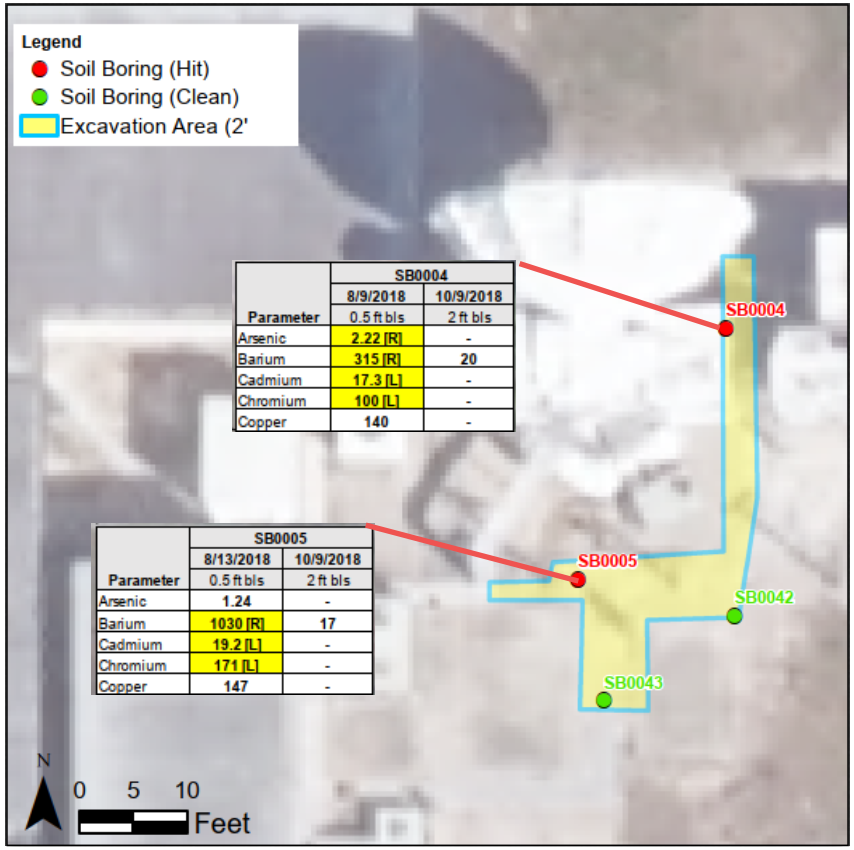
Parameter	SB0003 8/9/2018 0.5 ft bls	SB0003 10/9/2018 2 ft bls
Arsenic	1	-
Barium	191 [R]	4.8
Cadmium	2.92	-
Chromium	16.3	-
Copper	280 [R]	1.3 J

Parameter	SB0007 8/9/2018 0.5 ft bls	10/10/2018 0.5 ft bls	2/5/2019 0.5 ft bls	10/10/2018 2 ft bls
Arsenic	1.53	-	-	-
Barium	127 [R]	-	-	4
Cadmium	3.24	-	-	-
Chromium	25	-	-	-
Copper	38.6	-	-	-
TPH	350 [L]	670 [R, L]	340	-
C5-C8 Aliphatics	-	-	14 U	-
C9-C10 Aromatics	-	-	3.8 U	-
C9-C12 Aliphatics	-	-	7.1 U	-
C11-C22 Aromatics	-	-	210 U	-
C19-C36 Aliphatics	-	-	320	-
C9-C18 Aliphatics	-	-	13 J3	-

Proposed Excavation Area (2’ bls)

Figure 2
LOC 3 - SB0007 Excavation Area





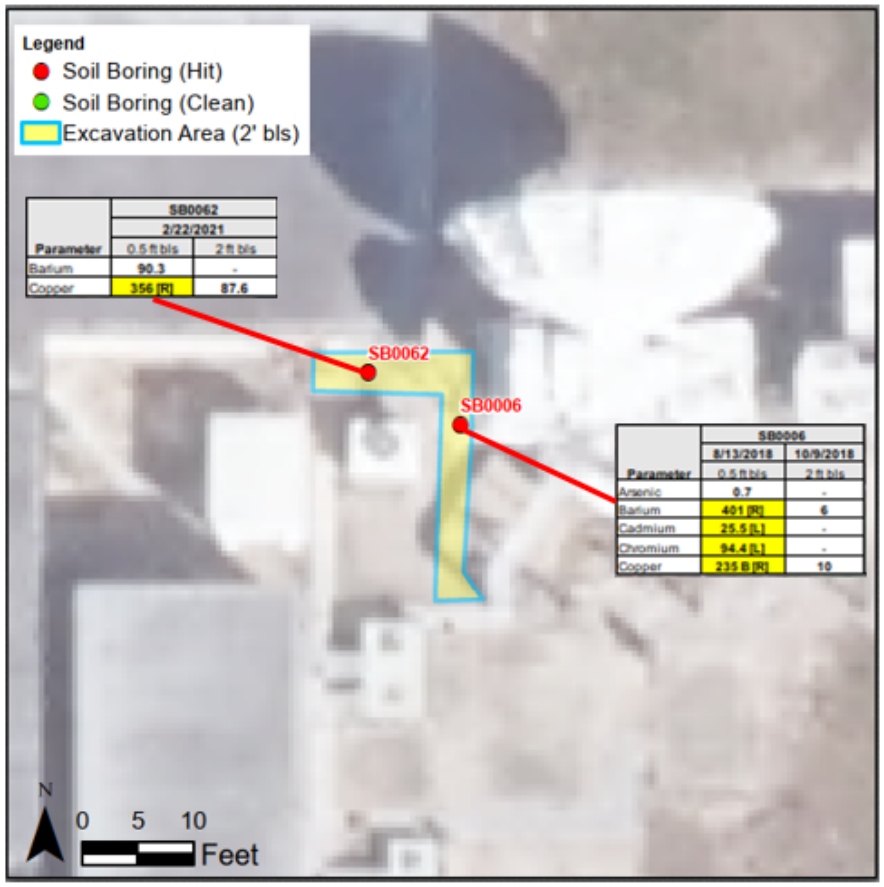
Parameter	SB0004 8/9/2018 0.5 ft bls	SB0004 10/9/2018 2 ft bls
Arsenic	2.22 [R]	-
Barium	315 [R]	20
Cadmium	17.3 [L]	-
Chromium	100 [L]	-
Copper	140	-

Parameter	SB0005 8/13/2018 0.5 ft bls	SB0005 10/9/2018 2 ft bls
Arsenic	1.24	-
Barium	1030 [R]	17
Cadmium	19.2 [L]	-
Chromium	171 [L]	-
Copper	147	-

245 square feet
18 cubic yards

Proposed Excavation Area (2' bls)

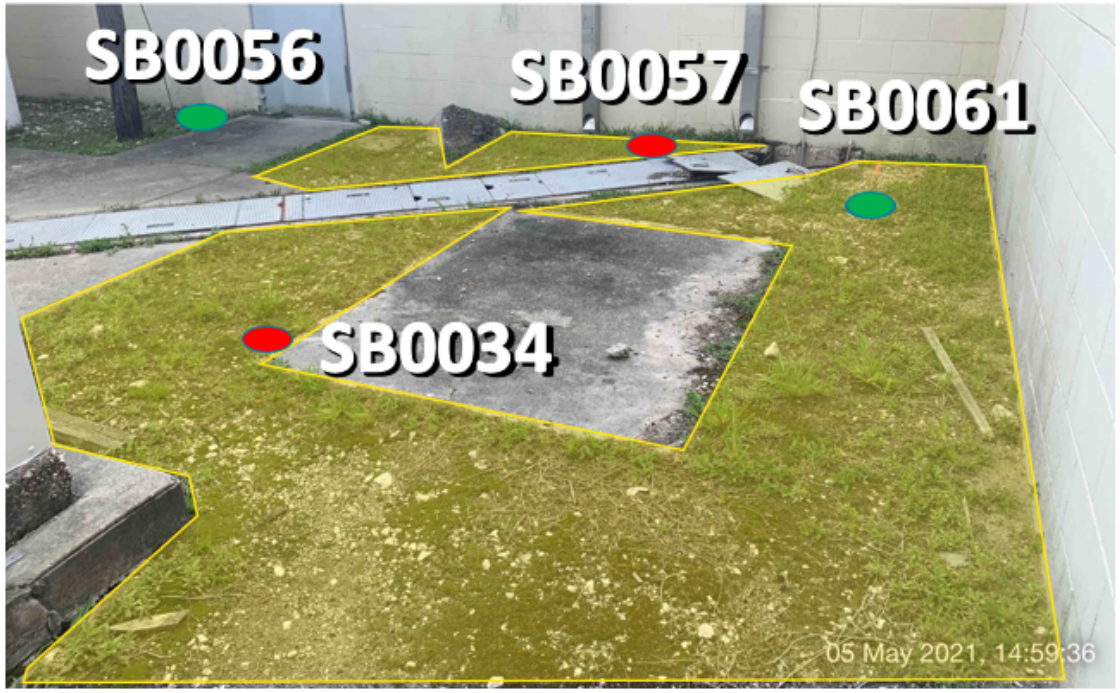
Figure 3
LOC 3 - SB0004 Excavation Area



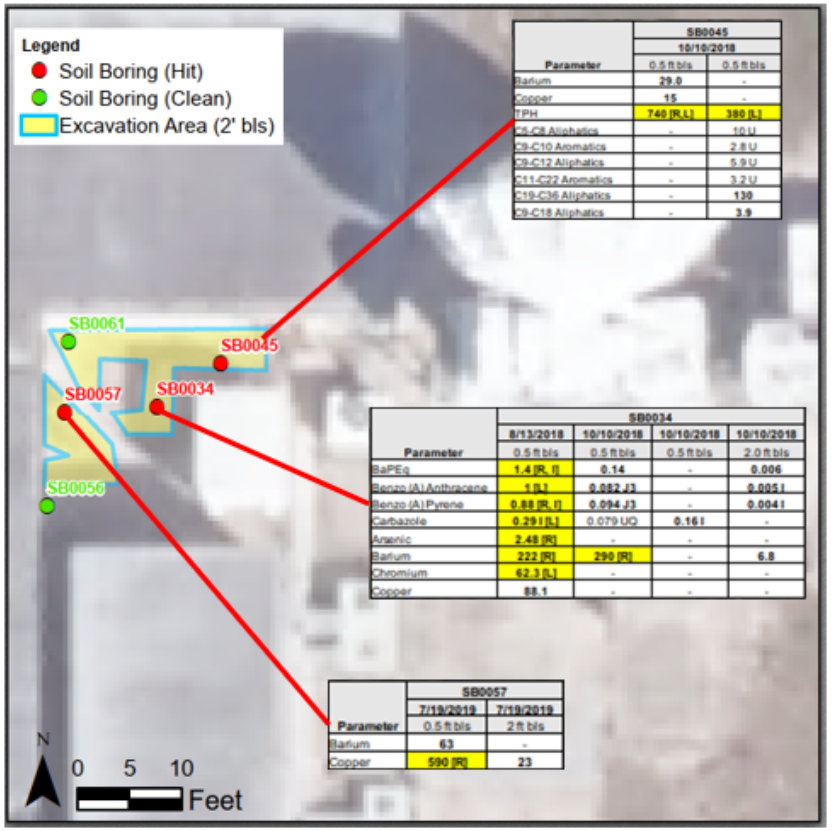
107 square feet
7.9 cubic yards

Proposed Excavation Area (2’ bls)

Figure 4
LOC 3 - SB0006 Excavation Area



151 square feet
11.2 cubic yards



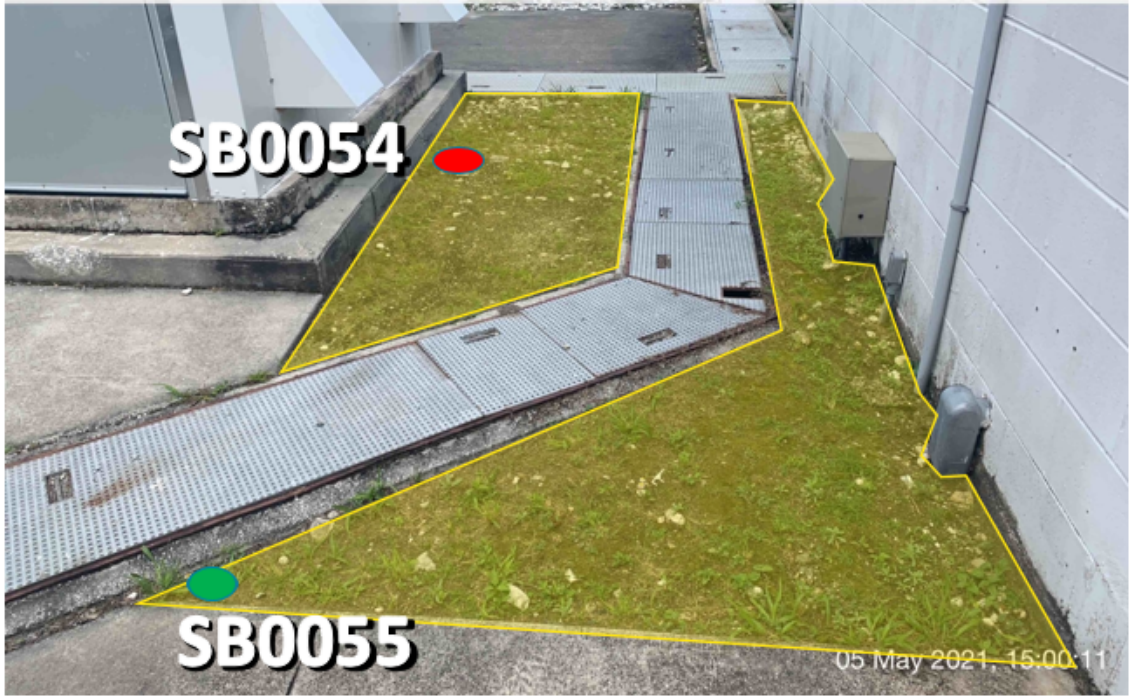
Parameter	SB0045 10/10/2018 0.5 ft bls	0.5 ft bls
Barium	29.0	-
Copper	15	-
TPH	740 [R,L]	380 [L]
C5-C8 Aliphatics	-	10 U
C9-C10 Aromatics	-	2.8 U
C9-C12 Aliphatics	-	5.9 U
C11-C22 Aromatics	-	3.2 U
C19-C36 Aliphatics	-	130
C9-C18 Aliphatics	-	3.9

Parameter	SB0034 8/13/2018 0.5 ft bls	10/10/2018 0.5 ft bls	10/10/2018 0.5 ft bls	10/10/2018 2.0 ft bls
BaPEq	1.4 [R, I]	0.14	-	0.006
Benzo (A) Anthracene	1 [L]	0.082 J3	-	0.005 I
Benzo (A) Pyrene	0.88 [R, I]	0.094 J3	-	0.004 I
Carbazole	0.29 I [L]	0.079 UQ	0.16 I	-
Arsenic	2.48 [R]	-	-	-
Barium	222 [R]	290 [R]	-	6.8
Chromium	62.3 [L]	-	-	-
Copper	88.1	-	-	-

Parameter	SB0057 7/19/2019 0.5 ft bls	7/19/2019 2 ft bls
Barium	63	-
Copper	590 [R]	23

Proposed Excavation Area (2’ bls)

Figure 5
LOC 3 - SB0057 Excavation Area



50 square feet

3.7 cubic yards

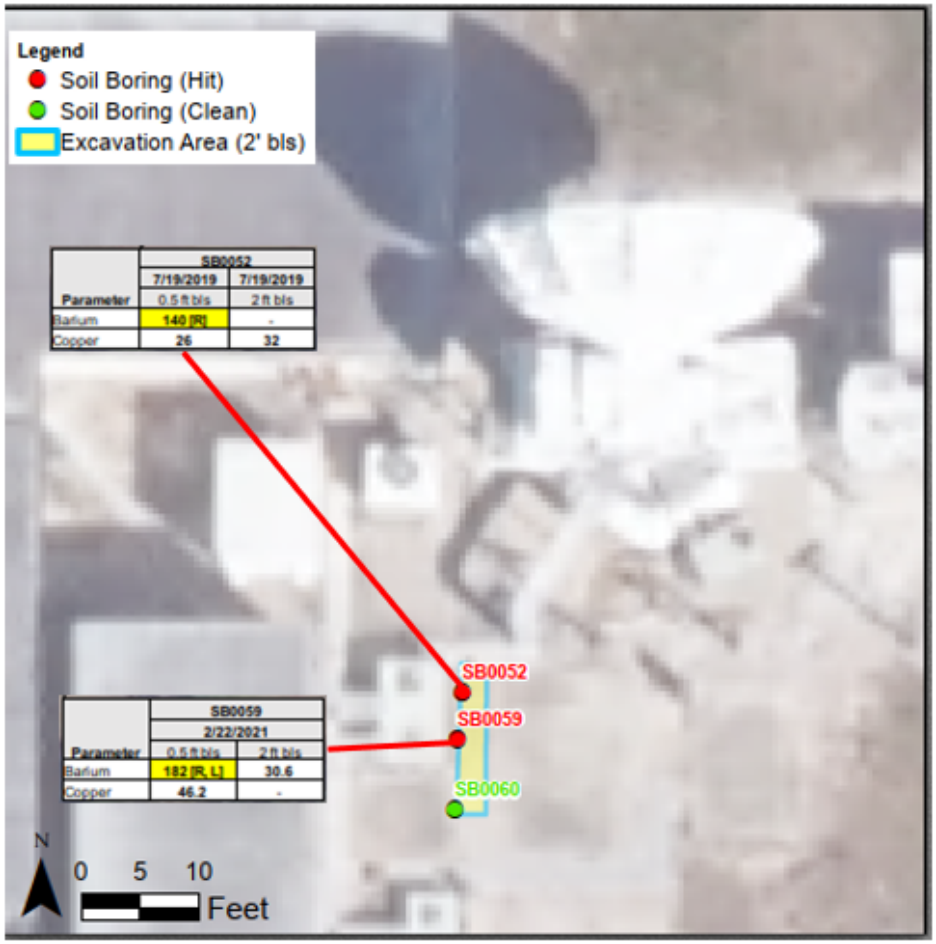
Proposed Excavation Area (2’ bls)

Figure 6

LOC 3 - SB0054 Excavation Area

29 square feet

2.2 cubic yards



Proposed Excavation Area (2’ bls)

Figure 7
LOC 3 - SB0060 Excavation Area